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ABSTRACT

In a contract grading system, the instructor defines the performance required for each grade, the student defines the performance level to which he or she will work, and signs a contract in which the instructor is committed to awarding this predetermined grade if the student attains the appropriate performance level. This paper is based on a review of the literature on contract grading. Its purpose is to provide information for instructors who are considering adopting the grade contract system and for others who wish to improve their grading procedures or conduct research using the method. The philosophical and psychological foundations of contract grading are discussed, and its advantages and disadvantages are reviewed. An annotated bibliography of more than 150 articles is appended. (GK)

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CONTRACT GRADING

by

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CONTENTS

	PAGE
Contract grading	1
What is contract grading?	2
What are the philosophical and psychological foundations of contract grading?	8
What are some of the claimed advantages or disadvantages of developing and implementing contract grading?	17
How have students reacted to contract grading?	22
What are some associated factors related to the success and/or failure of contract grading?	29
Appendix A: References and Annotated Bibliography	37
Subject Index to Appendix A	68

CONTRACT GRADING

Ever since the early years of the present century when Starch and Elliot (1912, 1913) produced their classic studies on the unreliability of teachers' scoring procedures, the controversial topic and ever-present task of grading has received continuous study and comment from educators at all levels of education. Historically, criticisms of the two major grading procedures, curve grading and grading based on absolute standards, have not produced significant improvements in either procedure, nor have the critics suggested a synthesis of each method's strong points. In fact, after a study of the history of grading, one would likely conclude that no commonly accepted system of grading has emerged from over a century of inquiry (Cureton, 1971).

However, an alternative to the two major grading procedures, contract grading, has recently attracted the attention of a number of instructors. Although the philosophical and psychological roots of contract grading extend back many years, the procedure is basically a phenomenon of the 1970s. This paper is based on a review of more than 130 articles on contract grading that are listed in the annotated bibliography of Appendix A. Its purpose is to provide information for instructors who are considering adopting the grade contract system and for others who wish to improve their grading procedures or conduct research using the method. It is organized into the following five sections:

1. What is contract grading?
2. What are the philosophical and psychological foundations of contract grading?

3. What are some of the claimed advantages or disadvantages of developing and implementing contract grading?
4. How have students reacted to contract grading?
5. What are some associated factors related to the success and/or failure of contract grading?

WHAT IS CONTRACT GRADING?

The term contract grading was used in educational literature in the early 1960's (McLaughlin, 1961), and since 1970, the publication of articles on contract grading has expanded extensively (see Appendix A). However, the term does not, at present, appear in any major educational dictionary (e.g., Good, 1973) nor as a descriptor in either Education Index or the ERIC system, although it is classified as a UF (Used For) term in the recently revised edition of Thesaurus of ERIC Descriptors (e.g., Educational Resources Information Center, 1980). There is, therefore, no simple definition on contract grading that can be generalized to describe all the various grading procedures used in different courses, by different instructors, and across various educational levels and institutions.

A typical definition of contract grading is offered by Harvey (1972) who describes it as:

> a business-like arrangement whereby the instructor defines the performance required for each grade, the student defines the performance level to which he will work, and signs a contract in which the instructor is committed to awarding this predetermined grade if the student attains the appropriate performance level (p.42).

This definition, less the section that deals with the actual signing of a contract, is closely related to what Gronland (1974) calls criterion-referenced marking, a system which involves judging performance in terms

of specified performance standards. In fact, it appears that a number of authors describe their grading systems as contract grading but use the term in a criterion-referenced grading sense, in that no actual contract signing is involved in their procedures (e.g., Book, 1975; Bowman, 1977; Heimler and Cunningham, 1972; Parchman, 1974). Within this framework, then, contract grading may be thought of as a subcategory of criterion-referenced grading.

However, a number of authors view contract grading as an important element of two recent developments in education, namely, "personalized" instruction (Keller, 1968; Rogers, 1969) and contract teaching (Asteriodis, 1976; Chandler, 1976; Close, 1975; Gilbert, 1972; Janaro, 1975; Kirschenbaum and Riechmann, 1975). These developments, as will be shown in a following section, provide the main philosophical and psychological bases from which advocates of contract grading formulate their grading procedures.

The majority of grade contracts found in the literature were designed to cover a whole course taken over a term or semester. However, some contracts, especially at the lower educational levels, were planned to cover only a relatively short unit in a course. In general, contracts can be categorized as either a TASK type or a POINT type. In the task system, important tasks are identified, and students are usually required to complete selected ones, plus a certain number of options, in order to receive a particular grade. For example, a contract may read: for a C, do the starred tasks and two additional ones. In the point system, in order to meet the various letter grade requirements, students accumulate a certain number of points by selecting and completing a variety of objectives/activities, each of which is worth a specified number of

points; for example, 50 points for a C, 100 points for a B, 150 points for an A. Points are normally assigned to each objective/activity based upon its level of learning and difficulty.

An examination of contracts cited in the literature reveals that contracting for grades is more than simply an alternative method of assigning grades. The various examples all demonstrate an intimate relationship between grading procedures and different instructional strategies. In order to emphasize the divergent approaches to contract grading found in the literature and indirectly define the concept in operational terms, the following questionnaire has been developed both as an aid for instructors who are interested in planning to use the grade contract approach and for those who wish to consider alternatives within their own grade contract system. The questions are mainly for the purpose of showing the extent to which the contract procedure can be applied with various instructional strategies. They should also be useful for researchers who wish to identify variables that may affect the outcome in studies concerned with the effectiveness of contract grading.

The questionnaire is divided into five parts: Grade Structure, Objectives, Negotiation Procedures, Time Factors, and Examinations, with the numbering continuous throughout. The parts, of course, are not to be considered independent areas, as there is considerable interaction and overlap among them in most courses. Because the questions listed are intended for reference only, there is no suggestion that the answers be affirmative.

Grade Structure

1. Are contracts based on a task system?
2. Are contracts based on a point system?
3. Are contracts based on a combination of the tasks/points system?
4. Are the contracts unstructured?

Objectives

5. Are the course objectives clearly described?
6. Are the objectives stratified in accord with the varying skills or experiences of the students?
7. Are the criteria and procedures to be used in evaluating the level or performance on each objective specified at the time the contract is negotiated?
8. Are different objectives related to different letter grade levels?
9. Are choices offered students in the types of objectives they wish to complete at each letter grade level?
10. Are the minimum standards specified for passing the course?
11. Do objectives vary in both quantity and quality at different letter grade levels?
12. Are provisions made by instructors to have peer reviews of objectives for the purpose of judging their appropriate weighting in the grading procedures?

Negotiation Procedures

13. Is each student given guidelines and an explanation of the contract grading system at the beginning of the course?

14. Are contracts negotiated for a single project or for an entire course?
15. If grades are assigned to individual projects, are the latter well paced throughout the course?
16. Is the grade contract completely unique for each student or are certain common learning experiences required of all students?
17. Are the conditions or methods to be employed by a student in completing the contract clearly stated?
18. Are students permitted to write some or all of the contract components?
19. Once a contract is signed, can it be renegotiated?
20. If a contract is renegotiated, can it be revised at the same level, a lesser level, a higher level, or in just one direction?
21. Is there a penalty for renegotiating a contract?
22. Are conditions described for assigning a grade when a student fails to fulfill a contract?
23. Are students required to sign duplicate copies of all contracts?
24. Is extra work required of the student when a contract is revised?
25. Can students "exit" from a course with the assurance that the grade earned is theirs even though the semester is not yet completed?
26. Is any aspect of the course work self-evaluated by the student?

Time Factors

28. Is sufficient time provided for personal meetings between students and the instructor for planning learning activities and negotiating the grade contract?
29. Is there a time limit within which the initial contract must be signed?
30. Is there a time limit within which a contract must be renegotiated?

31. Is the contract a self-paced approach?
32. Is an emphasis given to competency in the sense that students are permitted to resubmit unsatisfactory assignments in order to improve them?
33. Is there a timetable for the completion of each unit including the reworking of any paper or project?
34. Are there penalties for late assignments?
35. Do a minimum number of tasks/points have to be completed by a certain time, for instance, before midsemester?
36. Is class attendance a part of the grading structure?

Examinations

37. Are examinations required of all students or is the writing of examinations part of the contract options?
38. Are standards for exams set in absolute terms?
39. Are standards for exams set in norm-referenced terms?
40. Are exams judged on a minimal acceptable/unacceptable basis?
41. Are alternate forms of exams available?
42. Can students rewrite exams in which their score is below the standard for their desired grade?
43. Are all unsatisfactory exams/papers returned to students with the exact nature of difficulties specified and suggestions offered for possible means of improvements?

WHAT ARE THE PHILOSOPHICAL AND PSYCHOLOGICAL FOUNDATIONS OF CONTRACT GRADING?

The rationale for contract grading can be argued from a variety of points of view. Most of the literature that deals with contract grading is descriptive of the procedures used by the various practitioners, while the theory upon which the procedures are based is conspicuously lacking. Frymier (1965) was one of the first to present some of the principles underlying the contract idea. He suggested that each teacher must interpret the contract in his own way but felt that four principles were fundamental to the grade contract. These four principles will be used as a basis for the following initial discussion of the philosophical and psychological foundations of contract grading:

1. Clarification of Expectations and Limitations

According to Frymier, the grade contract enables a teacher to come to grips with educational objectives. Developing a contract forces a teacher to be very specific about what is expected of students and what is not, and accordingly provides students with a sense of security. However, students are also provided with opportunities to make choices and decisions. This flexibility within limits allows students to explore ideas, to possibly disagree with the teacher, and to examine information critically before accepting it as useful.

The detailed specification of objectives is, of course, compatible with behavioristic principles of education (Roberts, 1975). Flexibility of the system, provision for student choice and decision-making are principles advocated by humanists as well (Roberts, 1975).

2. Emphasis on Success and Learning

Frymier suggests that contract grading emphasizes achievement at a student's highest possible level. Procedures are therefore used that stress individualized activities, rewriting assignments until a minimum requirement is met, plus take-home and open-book exams as well as other out-of-class activities.

All of these procedures, but in particular the stress on individualizing instruction and self-pacing, will appeal to both humanistic and behavioristic educators.

3. Use of Students' Aspiration Levels

According to Frymier, allowing students to select the grade they wish to strive for, the activities they will engage in, and the method of demonstrating satisfactory completion of the activities permits a teacher to capitalize upon powerful motivating forces within the individual.

Offering choices shifts responsibility for learning from the teacher to the student and, at the same time, provides incentives by ensuring success under specified conditions. Students are thus challenged without being threatened. Having been allowed to establish their own aspiration levels, students are almost never dissatisfied with these grades, even if they are low.

4. Democratization of Action

Frymier suggests that democracy involves communication, self-direction, cooperative planning and action, high performance levels, choice, involvement, and good human relationships. He claims that all of these things are possible with the grade contract. Teachers and students meet to

define objectives, agree on methods to accomplish the objectives, and develop ways of assessing whether those objectives have been achieved. The teacher establishes the framework, provides counsel and encouragement, and assists the student to define and channel his efforts. The student, on the other hand, selects a level to strive for, chooses activities he likes to work on, and assumes responsibility for his own learning. This classroom organization and atmosphere, according to Frymier, helps promote good human relations.

Arthur W. Combs, an "elder statesman" of humanistic psychology, advocated and used a contract method of evaluation in his own courses. After fifteen years of trial and error, Combs (1976) found that contract grading met the essential criteria of a desirable grading system. According to Combs, such a system should:

a) meet college and university standards of effort, performance and excellence;
b) evaluate the student on his or her personal performance rather than in competition with his or her fellow students;
c) permit students to work for whatever goal they desire to shoot for;
d) provide the broadest possible field of choice for each student;
e) challenge students to stretch themselves to their utmost;
f) eliminate as much as possible all sources of externally imposed threat;
g) involve the student actively in planning for personal learning and placing the responsibility for this learning directly and unequivocally on the student's own shoulders;

h) free the student as much as possible from the necessity of pleasing the instructor; and

i) provide maximum flexibility to meet changing conditions.

Combs maintains that contract grading can and frequently does provide most, if not all, of these conditions.

An important principle of humanistic psychology relates to the role of the teacher as a facilitator of student learning. Combs argues that "the task of the teacher is not one of prescribing, making, molding, forcing, coercing, coaxing, or cajoling; it is one of ministering to a process already in being. The role required of the teacher is that of facilitator, encourager, helper, assister, colleague, and friend of his students" (p. 16).

The teachers who use contract grading agree that the procedure allows them to act as facilitators. One of them is Asteriadis (1976) who states the following:

> The traditional role of the educator has been that of an authoritarian who dictates to, rather than guides, his students. I believe an educator can better serve his students by adopting the role of a facilitator....
>
> When an educator adopts the role of a facilitator, he or she needs to consider the concepts of individualization and how these can be used within the learning process. There are many approaches to individualization, but because I have chosen the role of facilitator, I have chosen to use the concept of contractual learning. This alternative (a) allows for greater flexibility and student input than do many of the individualized instructional units; (b) allows the educator to serve as a facilitator of the learning process;... (p. 481).

Humanistic psychologists emphasize the importance of students assuming a large share of the responsibility for their own learning. Carl R. Rogers (1969) emphasizes responsibility in one of a number of principles of learning based on his experience and research involving client-centered (or nondirective) therapy. He believes:

> Learning is facilitated when the student participates responsibly in the learning process. When he chooses his own directions, helps to discover his own learning resources, formulates his own problems, decides his own course of action, lives with the consequences of each of these choices, then significant learning is maximized. There is evidence from industry as well as from the field of education that such participative learning is far more effective than passive learning (p. 162).

Advocates of contract grading endorse the principle of responsibility in various ways. Emmeluth (1972), in listing some of the assumptions upon which his course is based, suggests that the total environment must be "open, supportive, and choice offering--an environment in which the student takes more responsibility for his own learning" (p. 27). Kirschenbaum (1975) included the following statement in the goals and philosophy section of his course syllabus:

> Our aim is to provide a course in which a student has the opportunity to take responsibility for his/her own learning, get actively involved in the subject matter, and have a good time while learning (p. 73).

Asteriadis (1976) also claims that the use of contract learning "places the major responsibility for learning where it belongs, with the student" (p. 481).

Another procedure, although not unique to contract grading but supported by a number of practitioners of the contract grading system is that of allowing students a choice in the activities they pursue during the learning period. Of course, the choice to work for a particular letter grade is an intrinsic feature of contract grading. However, it is choice in the former sense that is supported by a number of advocates of contract grading. For example, mention was made of Comb's criteria for a desirable grading system which included, among others, the provision for students to work for whatever goal they desire. Emmeluth (1972) assumes

that students "learn most readily when given an opportunity to understand, discuss, and even choose what they are to do...(p. 27). Chandler (1976) suggests that the contract approach assumes that there are a variety of cognitive-affective styles of learning among students and that "most students prefer to exercise some freedom of choice within well defined limits" (p. 26).

Greene (1967), in her survey of the educational implications of existential philosophy, devotes an entire part of her text to the topic of choosing. Adopting the existential posture, Greene asserts the following:

> If persons are not to be understood in terms of some common "essence" or in the light of some abstraction like "humanity" or "man," they must be viewed as existent beings involved in creating themselves. And since nothing external can give continuity to his existence, each single person must give himself reality by making critical choices in all the situations of his life, committing himself to what he chooses, and renewing himself by making further choices--in his freedom, without guidance or guarantee. This is the way he comes to be a full person, an identity. It is the way he authenticates himself as an individual. Education, therefore, must provide opportunities for him to make the decisions which give him continuity as an existing individual. The skills, the subject matters which are taught, must be presented as possibilities which each individual can appropriate for himself as he chooses himself, as he creates himself as a reflective being (p. 96).

Biehler (1978) contends that the basic principle of humanistic education is to give pupils choices (p. 354). However, he does not advocate complete freedom of choice for all students. Rather, he feels one should consider Maslow's view that students will not function as good choosers unless their deficiency needs have been well satisfied. Since few students are functioning at the level of growth maturation, Biehler considers it reasonable to assume that many students will make unwise choices when given a great deal of freedom to arrange their own contracts.

Biehler also contends that the contract approach provides an appropriate means for implementing the Personalized System of Instruction (PSI) developed by Keller (1968) and the Student Self-Paced Style developed by Howe and Howe (1975). Both of these systems advocate choice and self-directed learning by students.

Of course, not all devotees of contract grading are in favor of allowing students a choice in learning tasks or activities. As shown in the literature, a number of contracts offer students no choice in activities required for a particular letter grade (e.g. Kaisershot, 1974; Poppen and Thompson, 1971; Perry, 1971). However, in some cases, the sequencing and timing of the activities are in the hands of the students and thus there is an element of choice present.

The discussion so far has centered, in the main, on the opportunities that contract grading affords an instructor for organizing a course consonant with the learning principles of either existential or behavioristic psychology. Although this is an important educational topic, it does not address the central problem of whether educational psychologists approve of grading in general or of contract grading in particular. It is of interest to explore the latter topic.

Homme et al. (1970) have offered a number of suggestions for developing systematic contingency contracts with students based upon operant conditioning theory. However, the authors do not discuss the assignment of letter grades. Among behavioral psychologists, grades are viewed as very poor reinforcers mainly because of their abstract nature and their usually long interval schedule. Examples of appropriate rewards include free period time during class or credits for the purchase of a pocket book (Clarizio, 1971).

Bloom et al. (1971) have adopted a basically behavioristic approach in their advocacy of mastery learning. They contend that it is first preferable to motivate students by setting standards of mastery and excellence apart from inter-student competition and then to extend the appropriate educational efforts to bring as many students as possible up to the mastery standards. What the mastery standard equates to in terms of a letter grade is suggested by Bloom when he writes "it is conceivable that all students will achieve mastery and a grade of A" (p. 53).

Block (1971), another advocate of the mastery learning approach, agrees with Bloom's contention that once students have attained mastery, there are no differences among them, so the assignment of grades reflecting individual differences is meaningless. Block summarizes his attitudes toward grades in the following points:

1) The student will be graded solely on the basis of his final (summative) examination performance.

2) The student will be graded on the basis of his performance vis-a-vis a predetermined standard and not relative to his peers.

3) All students who attain the standard will receive appropriate grade rewards (usually A's) and there will be no fixed number of rewards. (So that students do not feel their rewards are debased, since everyone can get them, it has been useful to state the grading standard and to explain its meaning in terms of the performance of students learning under a non-mastery system (p. 75).)

Although, in general, behavioral psychologists have tended either to accept passively or to ignore the conventional grading system, humanistic psychologists have been leaders in advocating grading reform or, in some cases, have called for the abolition of the grading system. For example, the Association of Supervision and Curriculum Development in its 1967 Yearbook advocated "abolition of the overwhelming burden of grades..."

and proposed "instead a simpler and more basic evaluation..." where "teachers will be free to teach and pupils to learn, and in which evaluation will be a more direct and instructive process" (Wilhelms, 1967).

In their text, Wad-ja-get? subtitled The Grading Game, Kirschenbaum and other humanistic educators (1971) were highly critical of the conventional grading system. Among the criticisms listed were the following:

1. Grades are unscientific, subjective and seldom relative to educational objectives.
2. They are misleading and focus only on one aspect of the child.
3. They promote superficial, spurious and insincere scholarship.
4. They lead to uncreative teaching.
5. They form a barrier between students and teachers.
6. Pupils perform for the grade and, as a result, show less initiative and independence.
7. Grades tend to divide students into recognizable groups, reflecting inferior and superior qualities, thus often becoming the basis for social relationships.
8. They establish a competitive system, with grades as the basis for achievement (pp. 62-63).

The authors also evaluated eight alternatives to traditional grading, one of which was the contract system, and came to the conclusion that the most worthwhile methods were the pass/fail and credit/no credit. Thus letter grades, per se, would not be used in an ideal school based on humanistic psychology principles.

One may conclude from this discussion of the philosophical and psychological foundations of contract grading that the assignment of grades based on contracting does not have any one clear psychological or philosophical theoretical foundation. However, a variety of instructional strategies and methods of classroom organization that have a solid

psychological and philosophical basis appear to be in harmony with a grading method based on contracting.

WHAT ARE SOME OF THE CLAIMED ADVANTAGES OR DISADVANTAGES OF DEVELOPING AND IMPLEMENTING CONTRACT GRADING?

The majority of articles published on contract grading are written by individuals who are advocates of the procedure. The articles are highly impressionistic, normally one-group designs, and lack an empirical basis for making any kind of generalizations. Given this limited research framework, the following sections will discuss the pros and cons of contract grading, first from the student's and then from the instructor's viewpoints. They will conclude with an assessment of factors that relate to contract grading in general. In order to increase the readability of the sections, only limited referencing is included.

One of the main advantages the grade contract has over the more traditional procedures of grading is that students know at the beginning of the term what is expected of them for each grade level. Classification of the specific goals, learning outcomes, and evaluation methods are made public and explicit, hence less awesome to the students. This procedure not only helps students in planning their course work throughout the term, but also removes much of the pressure and ambiguity in grading. Contract grading relieves students of the fear (usually unfounded) of a peremptory or an arbitrary action based on the whimsical fancy of the instructor.

Along with knowing what to expect, students are assured in most grade contracts that they can repeat or improve their assignments until the work is deemed satisfactory. Thus students feel a sense of freedom

from the possible stigma of permanent failure. The process is also nonpunitive in that no poor performance will detract from a good one.

Students evaluated by the contract method are not competing against other students but are rather competing against themselves or against their contracts. This procedure thus eliminates inter-peer competition that matches student against student in the battle for class rank. When the instructor becomes a helper and when competition with self is stressed over competition with others, then cooperation with others becomes an acceptable and profitable peer learning strategy. This atmosphere of cooperation appears to increase confidence on the part of some students concerning their own competence and abilities.

Other aspects of contract grading that appear to benefit students are the opportunities given them for practice in exercising their own responsibility and initiative through making commitments to fulfill personal learning goals. Students are thus motivated to learn basically on their own initiative and not because they are forced to by their instructors. Demanding personal involvement and initiative along with choice and voice within the curriculum actually appears to help students take more responsibility for relevant and meaningful learning even within a highly specified contract format suggested by some instructors. The end result for students is a sense of self accomplishment which is far greater than normal. The students not only see the relationship between the work done and the grades received, but they--rather than the instructor--control that relationship primarily through exercising their own initiative and responsibility. The control that students have for the grades they receive is permitted within the system without usurping the instructor's authority with respect to the acceptability of work.

Since the grade contract allows students to choose the level of difficulty of the tasks and assignments at which they wish to work, this option is particularly favorable for low ability students who, when confronted only with the minimum work required to pass the course, can concentrate on the basic essentials and find success. In contrast, these students, if placed in a traditional classroom where everyone is required to cover the whole course, will likely experience failure.

Some of the previously suggested advantages of contract grading are found in some cases, ironically, to work to the disadvantage of students. For example, a few students are not accustomed to assuming responsibillty for their own class work and learning strategies. For such students, the situation may heighten anxiety. In other cases, an instructor may give responsibility but limited power or authority to students. Independence is actually restricted, perhaps unconsciously, through the practice of paternalism on the part of the instructor. Some instructors may impose values that result in very structured and conservative learning situations.

Instructors can attempt to overcome the potential for rigidity within the grade contract procedure by making sure there are a variety of choices in assignments. Students can also be encouraged to suggest assignments as well as participate in specifying the evaluative criteria for the projects they suggest.

Finally, instructors must ensure that students who contract for the lowest grade are not just taking advantage of the system to slide through the course with minimum effort and learning. Standards at the lowest level must still emphasize high quality work.

A number of advantages of contract grading for instructors are similar to or complementary to those claimed for students. As most of

the activities are sequential and planned prior to the start of a course, an instructor can devote some of the normal preparation time to planning enrichment activities and meeting individually with students.

In some cases, the style and role of the instructor changes from a giver of answers and the sole source of wisdom to a resource person, and this change may help students start to find solutions to problems in which they are personally involved. Although lectures may be permitted at times, they are no longer relied upon as the main instrument of the instructor. Of course, this change of style may not appeal to all instructors. However, it is claimed as an advantage by a number of authors (Janaro, 1975; Mundy, 1974; Parks and Zurhellen, 1978).

By placing the instructor and student in a business arrangement whereby both parties negotiate for a contract in which each feels satisfied, the contract system encourages a cooperative relationship between student and instructor. The system allows the instructor flexibility in relating to each student as an individual, taking into account the ability and experience each has brought to the course. Thus the criteria for "satisfactory completion" of tasks or assignments need not be overly rigid.

One of the main advantages of contract grading from an instructor's point of view is that it greatly alleviates the end-of-term pressure of grade assignments. The objectivity of the system frees the instructor from the anguish of sole responsibility for determining where to put the fateful pencil mark on each computer card. If there is a failure to meet the contract, it is usually the fault of the student and not the fault of the instructor. The assignment of grades is therefore simplified. There

is also less likelihood that students will complain about the grades they receive.

Adoption of the grade contract is not, however, without some drawbacks for the instructor, principal among which is the increase in the amount of instructor time required beyond the regularly scheduled class periods. Discussion is, of course, an integral part of the contract system, and the instructor who does not have the time to schedule talks with students simply cannot try out the contract ideas. The instructor must also be "on call" to handle questions and/or problems students may encounter as they progress through the term.

Usually the contract system generates an increased volume of work by students that the instructor must read. This is a major factor if a mastery approach is used wherein assignments may be resubmitted after initial marking. The problem can be somewhat alleviated if deadlines are spaced throughout the course to spread the volume and make it easier to handle. The burden of retesting is also considerable, especially without the help of assistants. Most students, unfortunately, lack experience with goal setting and self-determination, and so it usually takes a considerable amount of instructor time to help them conceive their own ideas about handling course content and developing projects.

Usually the amount of instructor record-keeping is increased through the use of the grade contract. There is the necessity of keeping track of the various grades contracted for, the performance on tests and retests, and the acceptable conclusion of other assignments. This type of record-keeping is relatively routine and, if funds were available, could be handled easily by an assistant.

Perhaps one of the most difficult, although essential, jobs for an instructor adopting contract grading is that of organizing the various learning activities in terms of different grade levels. In most cases, the instructor has the burden of identifying standards for each grade and transforming the standards into terms that are meaningful to the student before the course begins. This is a very difficult task for inexperienced instructors. At other times, when maximum choice is offered students, it is often difficult to agree on a grade at the time the contract is drawn up. However, if the instructor cannot be definite about quantity or quality of work that deserves a specific grade at the beginning of a project, then the instructor should not attempt to use grade contracting.

HOW HAVE STUDENTS REACTED TO CONTRACT GRADING?

As students are the prime consumers of grades, it is important to determine their attitudes toward any innovations they experience in grading procedures. A number of investigators have surveyed the opinions of students who were enrolled in courses using contract grading. The majority of the studies were conducted at the university level where attitudes toward the grading procedures as well as many other aspects of the course were measured. Most of the studies were one-group or two-groups static designs. This section, in the main, reports thirteen studies that either survey student opinion regarding contract grading or attempt to compare student attitudes toward contract grading and conventional grading. It must be emphasized that a pure measure of attitude toward contract grading is impossible to achieve, because any expression of attitude toward one segment of a course is surely confounded by attitudes

toward the total organizational structure of the course. Because it is difficult to group the reports in any logical way, they will be presented in alphabetical order of the major authors.

Asteriadis (1976) surveyed 123 students enrolled in a required course in microbiology. Students were asked to respond anonymously to ten questions related to their experiences with contractual versus traditional grading. The results showed conclusively that students favored the contractual approach as designed by the author. A review of the actual items on the questionnaire, however, highlights the fact that questionnaires are usually course-specific and that generalizing the conclusions to other courses/classes should be avoided. An example using the responses to the following three statements should be sufficient to highlight this caution:

		Response (%)	
	Rating*	Contractual	Traditional
2. The system is designed to allow me to be responsible for my own education.	1	2	7
	2	3	33
	3	16	41
	4	33	41
	5	46	6
7. The system is designed so that there is more than one way to obtain the grade I desired.	1	0	35
	2	1	35
	3	0	28
	4	16	2
	5	83	0
9. The system is designed so that grades are fairly and impartially assigned.	1	1	15
	2	0	30
	3	9	35
	4	34	17
	5	56	3

* 1 = poor, 2 = below average, 3 = average, 4 = above average, 5 = excellent (p. 504).

Blankenship (1977) divided 57 students enrolled in an introductory food services management course into three groups (high, medium, and low) on the basis of their grade-point average. Members of each GPA group were randomly assigned to three groups of 19 students with high, medium, and low GPA subjects in each. Treatments were then randomly assigned to the groups. The only difference in the treatment groups was the grading system which varied on the amount of instructor-student input. The regular system was totally instructor controlled. The contract system was instructor controlled with some student input, while the weighted contract system involved fairly equal instructor and student input. Student preference ratings for the weighted contract system were significantly higher than for either the contract or regular system, and the contract system was rated significantly higher than the regular system.

Bornscheuer (1973) used contract grading in an upper division French literature course. At the end of the semester students expressed their opinion of the contract system on a course/teacher evaluation questionnaire. The instructor reported that the students overwhelmingly deemed the course to be beneficial to them and effective as an educational tool. They particularly liked knowing exactly where they stood and what was expected of them at any given time. Pressure normally experienced at the end of the semester was alleviated by using the contract. They appreciated the opportunity to strive for an "A", no matter what their usual level, and also the greater role they played in the running of the class. They thought the contract system was particularly effective in a small class of high-level students where communication between teacher and students was especially rewarding.

Burton and others (1977) compared responses on a 15-item course/instructor questionnaire for students who had experienced contract grading ($n = 35$) and others who experienced conventional grading ($n = 147$) in business courses. None of the items dealt specifically with contract grading. However, those dealing with grading in general produced interesting results. For example, contract students expected grades that were significantly below the expectations of the control group ($p = <.04$). Also, students in the conventional grading classes perceived the professor to be more impartial in grading than students in the contract situation, although the difference was not statistically significant. When asked to rate the instructor, students in the contract group assigned significantly lower ratings ($p = <.001$). In the overall judgment of the course/instructor, the contract students gave a rating that was significantly below ($p = <.001$) that of the control group. Most of the other questionnaire items tended to be answered more positively by the conventional grading group. This particular research is unique in reporting considerable negative reaction by contract students. One wonders why this situation occurred. One possibility is that one aspect of the particular contract system, namely, the negotiation procedures, which were very restrictive, may have influenced student perception toward all other aspects of the course. The professor did not allow grade levels to be lowered once a contract was made, although students were allowed to raise their contract levels during the semester. Students who did not complete the assigned quantity of work at any contracted grade level were automatically failed. Those who did not produce the required quality of work for a particular grade were assigned a grade two grade points less provided the particular quantity

of work was completed. This is the most rigid and punitive system of contract grading reported in the literature.

Kirschenbaum and Riechmann (1975) used contract grading, demonstrations, team teaching, and small group facilitators as a basis for organizing a large introductory psychology course (n = 135). The majority of students reported, on a variety of evaluation forms, that they very much preferred the contract grading system to the more usual grading systems. On a 9-point Likert scale (with "1" being most positive), the questions on contract grading had a modal response of "1" and no student responded with a rating less positive than "4". Written comments by students revealed that the contract grading system provided for "more personalized grading," "getting out what you put in," and "working at your own pace."

Kraft (1974) used a number of different grading procedures in a variety of physical education courses. Reactions of students to contracting were generally positive until a punitive factor was built into a particular approach; namely, that if a student contracted for a certain grade and failed to meet the point qualifications, a grade of F was recorded. Students felt that the failure penalty was too harsh and unfair and that partial credit should be given if a student did not meet his contract. They also felt that a student should not be required to guarantee his results before he begins the course and that the threat of an F for not completing work is detrimental to learning.

In a follow-up study, Parks and Zurhellen (1978) received responses from 82 students to a 12-item questionnaire dealing with various aspects of contract grading used in three education courses. All items dealing with course interest and learning experiences significantly favored the

contract approach ($p = <.001$). Students felt that the method helped develop greater interest in the course and that more flexibility was allowed with less anxiety. They also felt that more information was retained using the contract approach and that the system promoted greater motivation as well as allowing for learning differences and greater possibilities for students to develop their own objectives. Students expressed the belief that the contract system could be effective in any college course and also expressed the willingness to have another course in which the grade contract would be used.

Poppen and Thompson (1971) randomly divided four classes of educational psychology into an experimental group of two classes evaluated by a grade contract approach and a control group of two classes evaluated by a traditional grading approach. Nonsignificant differences between the groups were found when the students responded to the concept "Grading Procedures" on a semantic differential composed of three evaluative scales. However, the grade contract group's mean score was slightly higher than that of the non-contract group.

Smith and Riebock (1971) reported on the opinions of 56 sixth grade students who experienced contracting in reading. The results of a student questionnaire indicated that a majority of the students felt, among other positive factors, that they had worked as hard or harder with contracts as they had on previous assignments, found greater satisfaction in the work, felt the classroom atmosphere to be more relaxed, found reading more interesting and indicated they preferred having a choice in what they would study. There was also no negative reaction from parents regarding the use of contracts.

Stone (1978) randomly divided 50 students enrolled in an industrial education ceramics course utilizing a performance-based instructional strategy into a contract grading group and a traditional grading group. At the end of the course, the students were administered three semantic differential sub-scales measuring attitudes toward the method used to grade their tests, projects and research assignments. Overall, the contractual method of grade derivation was more acceptable than the traditional method.

Taylor (1971) assessed the opinions of 86 students regarding a grade contract used in an introductory educational measurements course at Washington State University. The results on the 14-item scale designed to measure various aspects of the contract system showed that the median score on all but two of the items was in the positive direction and above the midpoint of the scale. The grade contract students also ranked the fairness of their grading system significantly higher than the control group.

The year following Taylor's (1971) research, Warner and Askamine (1972) developed a contract grading system for the same educational measurement course at Washington State University. At the end of the term, the researchers administered a questionnaire to 176 students who had worked under the contract system. Students in general felt that the grade contract system was superior to the traditional grading system in specifying clearly the requirements of the course, providing for individual differences, as well as providing for students to experience success. They also felt that the system was more democratic than the traditional system and resulted in increased mutual trust and respect

between teacher and student. Students had two main criticisms of the grade contract system. First, they thought it was too rigid in that the precise and careful planning of student tasks by the instructor made the system seem mechanistic and "closed". They also felt that the method of judging assignments as either satisfactory or unsatisfactory emphasized quantity of work at the expense of quality.

Yarber (1972) used a contract-for-grade learning system in a 10-day venereal disease unit with 52 ninth-grade students. At the conclusion of the unit, a questionnaire designed to measure opinions about the grading technique was administered. In general, students tended to answer the 11 questionnaire items positively and in favor of the contract method. The percentage of positive responses to various items ranged from 74 to 97.

The foregoing short review, which includes content areas as divergent as the study of microbiology and industrial education as well as student samples ranging from the sixth grade in elementary school to university seniors, shows that students in general tend to favor contract grading. The attitudes are, however, course-specific and similar to those the authors had anticipated in implementing the grade contract method. The only negative student reaction was reported in a course which assigned a failing grade to students who did not produce the quantity of required work for the grade level at which they contracted.

WHAT ARE SOME ASSOCIATED FACTORS RELATED TO THE SUCCESS AND/OR FAILURE OF CONTRACT GRADING?

This concluding section contains a potpourri of topics related to contract grading. These include a report of a subject matter area in

which contract grading has been used extensively, a description of studies that related psychological theory to contract grading, a report on the achievement gains of low-ability, inner-city, eighth-grade students who experienced contract grading, and a suggested research problem related to the importance of actually signing a grade contract.

As shown in Appendix A, an area in which contract grading has been used extensively is that of secondary school and college speech communication courses. The interest of speech instructors in contract grading resulted in the publication by the ERIC Clearinghouse on Reading and Communication Skills (with the help of the Speech Communication Association) of a special booklet on contract grading in speech communication courses (Book et al., 1978). This booklet deals with how to use contract grading to teach and reinforce communication principles, the advantages and disadvantages of a specific agreement between teacher and student for a grade, as well as providing tips and cautions. It also contains sample contracts and problem cases.

The Speech Communication Association is the only association that has contributed toward the dissemination of information on contract grading on a national scale. One may infer from this fact that leaders in the speech communication field highly recommend to their colleagues the serious consideration of contract grading as an alternative to other more conventional methods of grade assignment.

An interesting experiment by Polcznski and Shirtland (1977) employed the theory of expectancy, often referred to as goal path analysis, to study the motivation and effort of students enrolled in a course using contract grading. Expectancy theory suggests that in order to induce

motivation, a desirable goal (in the case of a student, a high grade) must be presented and a path to that goal clearly specified. A student must also believe that the performance level reached through effort on his/her part will result in the attainment of the goal. The relationship between the student's performance and the goal is called instrumentality. In order to determine if contract grading did raise the instrumentality of students, an investigation was conducted wherein seven classes in business administration experienced contract grading while two classes experienced traditional grading methods.

The results based on questionnaire returns from 280 students showed that there were statistically significant differences in favor of the contract classes on all three questionnaire items designed to measure instrumentality. The authors concluded that through contract grading it is possible to change levels of students' effort and motivation to perform by clarifying the path to the goal of grade achievement.

A study by Thompson and Davis (1970) employed contract grading with a group of low-achieving, inner-city, eighth-grade mathematics students. A grade contract group was equated with a control group on the basis of intelligence and previous mathematics grades. A comparison of the two groups at the end of the second six-week grading period revealed a large increase in higher grades for the contract group while the control group grades remained about the same. The contract group's composite grade average was significantly higher ($p < .05$) than that of the control group and as such, resulted in one of the few studies that showed achievement differences between grade contract and control students.

Most of the literature comparing grade contract with control groups have measured behavioral changes of entire classes. In such cases,

individual variability due to relatively stable pre-existing personality differences was treated as error variance. However, three studies will be reported on briefly that investigate the relationship between a contract grading system and students' internal-external locus on control. The interested reader is encouraged to consult the original studies for more detailed information. In the first study by Allen, Giat and Cherney (1974), a total of 88 students were enrolled in an abnormal psychology course utilizing contract grading which was specifically designed to maximize the students' control over their academic performance. At the conclusion of the course, after the students had been classified into internal and external on the basis of the median score on a measure of locus of control, a variety of data was analyzed. The results confirmed the authors' predictions that internally organized students would (a) begin fulfilling course requirements more quickly, (b) earn higher grades, and (c) predict their performance more accurately than students with external locus of control.

A second report also involved the classification of students as either internal or external on the locus of control dimension (Daniels and Stevens, 1976). In this study, however, approximatly one-half of the internal and external students were randomly assigned to either a self-directed group (grade contract) or a traditional learning group (conventional grading). The results showed a strong interaction between locus of control and instructional methods with the dependent variable being a 75-item multiple-choice achievement test administered at the conclusion of an eight-week study of introductory psychology. A strong disordinal interaction was found, with internals performing better under the contract

method and externals performing better under the teacher controlled method.

Considering the limited evidence available in the literature to support disordinal interaction in aptitude-treatment research, these two studies stand out, in that they lend support to the proposition that more effort should be directed toward matching an educational method to the characteristics of students. According to Allen, Giat and Cherney (1974):

> If external subjects can progress more rapidly and accrue more benefits from a semiautonomous, self-paced education, educators might give serious consideration to providing this option. It is necessary that not only intellectual inputs be the focus of education, but that individually appropriate motivational orientations be considered as well (p. 1972).

The third study is unique in that the subjects were elementary school pupils (McMillan, 1980). Two sixth-grade classes were divided into internal and external locus of control groups based upon the median score of the Intellectual Achievement Responsibility Questionnaire. Half the internals and externals in each class were randomly assigned to a structured instructional procedure and half assigned to a grade contract procedure. The pupils experienced a two-week unit on nutrition. An analysis of covariance using a nutrition pretest and a standardized reading test as covariates revealed no significant differences on the knowledge post-test when analyzed for method of instruction, locus of control and interaction. However, an analysis of the responses to two attitude items suggested a possible interaction in that internal students who used the contract method reported (although not to a statistically significant degree) a more positive attitude toward the future use of the course materials as well as greater enjoyment of the unit.

One of the main problems involved in trying to generalize from the literature on contract grading is that the effects of a grading procedure are usually confounded, to a greater or lesser extent, with other variables such as student/teacher characteristics, team teaching, mastery learning, the Keller plan, small group work, and subject matter. Another factor that creates a problem in generalizing from the literature on contract grading is the lack of specific meaning attached to the term contract grading. It would help if the term could be limited to a grading procedure using the following two elements: 1) a negotiation procedure which implies student options in learning tasks, and 2) a written contract prepared in two copies that both a student and an instructor sign and which spells out exactly what will be accomplished during the learning period. The latter element is, of course, unique to contract grading. The first element is not essential, particularly for definitional purposes, as learning options are used with various forms of traditional grading practices as well as with different types of criterion-referenced grading systems (Gronlund, 1974).

There have been no reports in the literature on the effects of signing or not signing a grade contract. Staiger (1978) asked the question of how important it is to have each student actually sign a contract at the beginning of the course. In his electronics course, he did not require his students to sign, his reasons being that many students are unfamiliar with both the grade contract system and the course content. He also felt that many students adjust their goals during the semester as they become familiar with the reality of the contract schedule.

> Initially, most, if not all, students strive for an above average grade.... With students adjusting their contract goals, the actual 'signing' of a contract seems needless to me. On the other hand, the signing procedure might make students study the contract in depth, causing them to consider carefully the commitment and their ability to meet their commitment. This idea needs further study. (Obviously, the contract cannot be legally binding (p. 419).)

With reference to the foregoing discussion, it would appear that research should be conducted on the question of signing or not signing a grade contract. One theoretical base upon which hypotheses possibly could be developed is the Theory of Cognitive Dissonance by Festinger (1957). The theory suggests that commitments to behavior not supported by corresponding attitudes will lead to motivational stress. When a contract is signed, depending upon the student's commitment, there may or may not be a corresponding attitudinal change in the signer. The completion of the contracted work may depend upon the type of attitude modification made by the signing. The actual signing is a public representation of the student's commitment to the terms of the contract. However, there are two possible private paths that this commitment may take. If the student does not believe in the contract and signs only because it is the path of least resistance, then he does not make a private commitment to do the work. If this is the case then, when he does not fulfill the contract, there will be no discrepancy within him and therefore no stress applied when he receives a lower grade. On the other hand, if the student makes a private commitment to do the work, then he must do all he can to fulfill the contract in order to reduce the "dissonance" that would exist if he had not completed the contracted tasks.

What is the current status and possible future of contract grading? This relatively new and innovative method of assigning grades, as shown by the accompanying bibliography, has been used in a variety of diverse

subject areas from elementary to graduate school. The procedure has an enthusiastic following in the subject areas of business, communications and speech, physical education and in various sciences. Judging by the number of yearly publications, one may conclude that the trend is now negative compared with the peak years of the mid-1970s. However, an important change is taking place. The most recent articles are not only descriptive of the grade contract procedure, as were the earlier ones, but they also are more sophisticated in their research designs. It is hoped that this positive trend will continue.

A reasonable conclusion, based upon the foregoing review, is that contract grading appears to have a permanent place among the most appropriate current methods of assigning grades to students.

APPENDIX A: REFERENCES AND ANNOTATED BIBLIOGRAPHY

This appendix combines certain text references (without annotation) with an annotated bibliography, for a total of 175 entries. It was compiled to provide teachers and researchers access to information concerning the advantages and/or disadvantages of the use of the grade contract procedure for identifying various levels of student achievement. Although the entries are not limited to any educational level and are not confined to any specific curriculum area, the majority deal with subjects taught in high school, college, and university institutions.

All entries are listed alphabetically by author and are numbered. A subject index to Appendix A is also included. Numbers appearing in the index refer to entries.

The author would appreciate receiving a listing of any studies that were inadvertently omitted from this bibliography or any future studies that could be included in an updating of this listing.

1. Aierstock, B. A. Contract Teaching--One Step Toward Humanizing Education. Paper presented at Eastern Division, American Alliance for Health, Physical Education, and Recreation. Baltimore, Maryland, March, 1978. 10 pages. (ERIC Document Reproduction Service No. ED 151 308).

This paper examines the subject of contract teaching and grading as it relates to the field of instruction for physical education majors. Examples of contract grading are described for a number of physical education courses along with their rationale.

2. Allen, G. J., Giat, L. and Cherney, R. J. Locus of control, test anxiety, and student performance in a personalized instruction course. Journal of Educational Psychology, 1974, 66 (6), 968-973. (ERIC No. EJ 118 386).

The authors studied the effects of locus of control and test anxiety on the achievement of upper level students enrolled in an abnormal psychology course organized on a grade-contract system. Internal locus of control students achieved significantly higher than externals on a number of important course tasks. Trait test anxiety was not reliably related to academic outcomes.

3. Amsdem, S. Have you ever tried contracting for grades? English Journal, 1970, 59, 1279-1282. (ERIC No. EJ 029 792).

Describes the use of the grade contract in a short English unit dealing with Robert Sherwood's Abe Lincoln and Lorraine Hansberry's A Raisin in the Sun. Six advantages of the contract-for-grades system are listed.

4. Annarino, A. A. Another way to teach. Journal of Health, Physical Education and Recreation, 1974, 45 (8), 43-46. (ERIC No. EJ 106 635).

Sample grade contracts are presented and described in the areas of volleyball and track and field for high school girls, and in the areas of archery, badminton, golf, and gymnastics at the university level.

5. Asteriadis, G. T. Contractual learning: A viable approach to education in the biological sciences. American Biology Teacher, 1976, 38 (8), 481-482; 503-504. (ERIC No. EJ 148 858).

Described is a contract approach used in the biological sciences at the university level where students have maximum opportunity to organize and write their own contracts. Responses to a 10-item questionnaire showed conclusively that students favored the contractual approach.

6. Ball, L. V. Student Contracting for Achievement Grades in Ninth Grade General Mathematics. (Doctoral dissertation, University of Connecticut, 1973, 143 pages.) (ERIC Document Reproduction Service No. ED 081 623).

Two teachers each taught ninth-grade general mathematics to one contract group and one control group. No statistically significant differences were found on either attitude or achievement measures.

7. Barkley, M. V. To grade or not to grade. Illinois Teacher, 1975, 38 (4), 201-203. (ERIC No. EJ 113 820).

Some advantages and disadvantages of the conventional A-E grading system are listed. The merits of the contract system are discussed in terms of a sample contract for a beginning high school child development class.

8. Berta, D. C. Contracting, a possible solution. Science Teacher, 1974, 41 (4), 37. (ERIC No. EJ 098 458).

A description of how grade contracting improves student motivation in a junior high school science program. Also discussed are a few of the problems related to the procedure.

9. Biehler, R. F. Psychology Applied to Teaching. 3rd ed. Boston: Houghton Mifflin, 1978.

10. Blankenship, S. M. The effects of regular grading and contract grading on college students' achievement, performance, and preference for grading systems. (Doctoral dissertation, Ohio State University, 1977, 150 pages.)

A three-by-three factorial design with grading system and GPA as independent variables was used with sophomore and junior college students in an introductory course in food service management. Contract, weighted contract and regular grading groups were measured on a number of outcomes. Achievement levels on tests showed no significant differences across groups. However, students preferred the contract systems over the regular systems. The instructor expended considerably more time with the contract groups than with the regular group. Suggestions are given for further research on contract grading.

11. Block, J. H. (Ed.). Mastery Learning: Theory and Practice. New York: Holt, Rinehart and Winston, 1971.

12. Bloom, B. S. et al. Handbook on Formative and Summative Evaluation. New York: McGraw-Hill, 1971.

13. Book, C. A Rationale and Application of Contract Grading for Use in the Interpersonal Communication Course. Paper presented at the Annual Meeting of the Central States Speech Association. Milwaukee, Wisconsin, April, 1974. 10 pages. (ERIC Document Reproduction Service No. ED 090 612).

Discusses the various components that should be included in a course organized in terms of a grade contract and explains why an interpersonal communications course lends itself to such an organization.

14. Book, C. Contract grading in the interpersonal communication course. Speech Teacher, 1975, 24 (2), 133-138. (ERIC No. EJ 122 455).

The author reviews various ways that grade contracts may be organized and the advantages of the grade contract system. A detailed example of grade contracting in an interpersonal communications course is presented in which the student is required to complete five journal entries plus a number of behavioral objectives, classified in terms of Bloom's taxonomy, in order to receive a particular grade.

15. Book, C. L. et al. Contract Grading in Speech Communication Courses. ERIC Clearinghouse on Reading and Communication Skills, Urbana, Ill.; Speech Communication Association, Falls Church, Va., June, 1978. 48 pages. (ERIC Document Reproduction Service No. ED 157 112).

This document presents contract grading as a system of evaluation for speech communication courses at the high school or college level. The first section is theoretical and deals with the advantages and disadvantages of the system. The second, a practical section, contains several model contracts.

16. Bornscheuer, J. H. The grade contract and the language class. Foreign Language Annals, 1973, 6 (3), 367-370. (ERIC No. EJ 071 899).

The basic theories of grade contracting advocated by J. R. Frymier were applied to a senior-level French Literature course in which students studied four French novels of the late 19th and 20th centuries and their authors. Student opinion was overwhelming in favor of the grade contract system.

17. Bornscheuer, J. H. The grade contract revisited. Foreign Language Annals, 1976, 9 (2), 166-169. (ERIC No. EJ 139 540).

The article describes adaptations of and variations on the grade contract as applied to junior-level courses entitled "Survey of French Literature" (from 1800 to the present) and "Advanced Grammar and Composition" as well as a senior-level summer course entitled "Masterpieces of French Literature." The author felt that the grade contract system helped her to teach more effectively, helped to motivate students, and helped to increase enrollment.

18. Bowers, G. and Howard, M. Sameness is not a virtue. English Journal, 1975, 64 (8), 49-52. (ERIC No. EJ 136 001).

A ninth-grade team-taught communications arts program that features learning centers and individualized student contracts is described. A three-party contractual agreement form for signing by pupil, parent, and teacher is printed which provides space for describing how a particular letter-grade will be earned.

19. Bowman, J. S. Winning the grading game. Teaching Political Science, 1977, 4 (2), 225-234. (ERIC No. EJ 152 353).

    Described is a modified grade contract approach used in an introductory American politics course at the university level. The grading procedures used factors such as short, noncumulative tests, discussions, reports, group projects, book reviews, research projects, and a final exam. Suggestions are given to overcome three problems encountered by instructors who used the grade contract.

20. Brown, B. J. Teaching General Business. Delta Pi Epsilon Rapid Reader No. 1. 1977. 40 pages. (ERIC Document Reproduction Service No. ED 150 327).

    This is one of a series of booklets designed for enriching the teaching of business subjects. A section on evaluation describes how contracts may be used to provide students with a way of earning grades.

21. Browning, F. M. An experience in contracting physiology. Journal of Health, Physical Education and Recreation, 1972, 43 (8), 18; 95.

    A course in exercise physiology designed for undergraduate physical education majors is described in terms of eight written contracts. Standards are preset for examinations, and students must complete certain required and optional contracts in order to be assigned a specific grade.

22. Burkett, L. N. and Darst, P. W. How effective is contract teaching in theory class? Journal of Physical Education and Recreation, 1979, 50 (4), 86-87. (ERIC No. EJ 208 731).

    The authors compared the test results of students enrolled in a physiology of exercise course where one-half the students were given traditional instruction while the other half experienced contract instruction. They concluded that the grade contract procedure was highly effective in promoting greater achievement.

23. Burton, G. E. et al. Effects of contract grading on student evaluations of teachers. Educational Horizons, 1977, 55 (3), 128-133. (ERIC No. EJ 161 704).

    A comparison was made between five classes taught by the same professor at a college of business using a conventional grading system and a sixth class using contract grading. The contract group, which was not allowed to lower the contract once a commitment was made, and which also experienced severe penalties for not completing the assigned quantity of work, earned course grades that were significantly higher than the other classes. However, the contract group responded by giving significantly lower evaluations of the professor.

24. Butzow, J. W. and Pare, R. Physical science: a multi-media facilitated course. Journal of College Science Teaching, 1972, 2 (1), 29-32. (ERIC No. EJ 065 088).

A science education course for prospective elementary teachers is described in which the main emphasis is on experimental work and auto-instructional methods with a contract grading system.

25. Carr, K. R. The contract method in the small high school. Saskatchewan Journal of Educational Research and Development, 1974, 4 (2), 8-15. (ERIC No. EJ 100 405).

The author describes her experience of teaching a chemistry course at the grade XI level using a grade contract approach with one class divided into three learning levels. In general, the author favors the approach for developing creativity, enquiry, and responsibility in students.

26. Carroll, C. J. Innovations in Introduction to Theatre Courses. Paper presented at the annual meeting of the Eastern Communication Association. Philadelphia, Pennsylvania, March, 1976. 15 pages. (ERIC Document Reproduction Service No. ED 149 412).

Presents a detailed outline of an Introduction to Theatre course and a description of the experiences of three faculty members from Prince George's Community College who team-taught the course. Included also are copies of the grade contract requirements and options.

27. Carter, C. Creature Features. 1972. 20 pages. (ERIC Document Reproduction Service No. ED 092 973).

Describes a junior high school language arts unit dealing with things that give people the heebie jeebies (an especially interesting subject at Halloween time). Includes a grade contract listing the required and optional projects together with their various point values.

28. Chamberlin, L. J. Improve your teaching through student contracts. School and Community, 1975, 61 (7), 34-35.

Student contracts can be a powerful means of helping certain youngsters assume responsibility for their own learning. Several points should be considered when developing student contracts: time allotments, specificity of assignments, student motivation, relevance, length of assignment, and opportunity for student practice.

29. Chandler, T. A. Utilization of contract options in teaching educational psychology. Teaching of Psychology, 1976, 3 (1), 26-28. (ERIC No. EJ 135 180).

Contracts were used to enrich and internalize the basic principles of a graduate level educational psychology course entitled "Learning Theories Applied in Education." Based on his experience and the evaluations of the course by students, the author suggests that in the future, contract options be kept only for students who can demonstrate subject area mastery at both the lower and higher levels of the cognitive domain.

30. Child Care Services Handbook. Duval County School Board, August 1974, 107 pages. (ERIC Document Reproduction Service No. ED 139 971).

    This handbook contains a variety of administrative and program resources for secondary teachers in the area of child care services. Included is a sample grade contract and an explanation of how it may be used.

31. Christenberry, M. A. Individualizing Course Content in Undergraduate Education: A Contract Plan. Paper presented at the annual conference of the International Congress for Individualized Instruction. Boston, Massachusetts, November, 1976. 16 pages. (ERIC Document Reproduction Service No. ED 144 563).

    Describes a procedure for individualizing a parent education course through contracting. Some of the advantages and disadvantages of the system, including contracting for grades, are discussed.

32. Clarizio, H. F. Toward Positive Classroom Discipline. New York: John Wiley and Sons, 1971.

33. Close, D. B. Contract teaching: education by objectives. Journal of Instructional Psychology, 1975, 2 (4), 19-27.

    Presents a theoretical discussion demonstrating the similarities between contract teaching and grading and the idea behind the widely researched and well-known theory of management known as "management by objectives". A grade contract in an introductory class in principles of risk and insurance is printed, and various advantages of the contract system are explained.

34. Combs, A. W. A contract method of evaluation. In S. B. Simon (Ed.), Degrading the Grading Myths: A Primer of Alternatives to Grades and Marks. Washington, D. C.: Association for Supervision and Curriculum Development, 1976.

35. Creative Speech Communication for South Dakota. K-12 Curriculum Resource Book. South Dakota State Division of Elementary and Secondary Education, 363 pages. (ERIC Document Reproduction Service No. ED 087 147).

    Discusses the rationale underlying the contract plan and also contains a sample contract in speech, listing the requirements for three letter-grade levels.

36. Cummings, R. H. Rewards for work. Journal of Physical Education and Recreation, 1975, 46 (8), 31. (ERIC No. EJ 136 985).

A system of contract grading is used for evaluation in professional skills classes in the physical education program at the Community College of Baltimore. An example from a typical professional soccer skills unit is presented.

37. Cunningham, J. B. and Heimler, C. H. Using learning contracts to individualize science instruction. The Science Teacher, 1972, 39 (6), 27-29.

Suggestions are made on how to write and organize learning contracts in order to individualize science instruction. Examples of activities and their letter-grade equivalents are presented along with some of the main advantages and disadvantages of the system.

38. Cureton, L. W. The History of Grading Practices. N.C.M.E. Measurement in Education, 1971, 2 (4), 1-8.

39. Daniels, R. L. and Stevens, J. P. The interaction between the internal-external locus of control and two methods of college instruction. American Educational Research Journal, 1976, 13 (2), 103-113. (ERIC No. EJ 157 776).

Subjects were classified as either internal or external on the locus of control dimension. Approximately half of the externals (internals) were given a teacher controlled method of instruction while the remaining subjects were involved with a grade contract plan in an introductory psychology course. Analysis of covariance showed that internals performed better under the contract plan and externals performed better under the teacher controlled method. Implications of the results were discussed as well as the role of moderator variables in aptitude-treatment interaction research.

40. Dash, E. F. Contract for grades. Clearing House, 1970, 45 (4), 231-235. (ERIC No. EJ 031 143).

The author describes the philosophy and advantages of the grade contract as applied to a junior-level course in educational psychology. An example of a contract at the C-level is presented.

41. Davison, L. D. Contracted learning of high school physics by nonscience majors. School Science and Mathematics, 1976, 76 (2), 110-114. (ERIC No. EJ 135 007).

The author discusses the structure of contracts applied to a Project Physics course, the grading scale used, and summarizes some of the major positive aspects of the contracted learning approach.

42. Delaney, C. and Schoolcraft, V. Promoting autonomy: clinical contracts. Journal of Nursing Education, 1977, 16 (9), 22-28.

A system of contracting for grades was utilized with student nurses involved in a clinical practicum at a community mental health center whose clients had had numerous psychiatric hospitalizations. Students' and instructors' evaluations of the procedure are presented along with proposed changes.

43. Delworth, U. et al. The contract system: students as participants in the grading process. Journal of College Student Personnel, 1973, 13 (3), 277-278. (ERIC No. EJ 080 180).

A brief description of the advantages of the contract system as used by a university student development staff teaching a variety of human relations classes.

44. De Pue, D. L. Let your students contract for their grade. Man/Society/Technology, 1977, 37 (1), 23.

A sample grade contract is presented for an electronics technology course in teacher education. Procedures for organizing the contract are suggested.

45. Eddy, J. M. and Zimmerli, W. H. Contract Grading--Traditional Grading: A Comparison. 16 pages. (ERIC Document Reproduction Service No. ED 134 623).

A grade contract group and a traditional grade group were compared for changes in knowledge and attitude during a college course in ecological relationships. No statistically significant differences were found between the two groups.

46. Educational Resources Information Center. Thesaurus of ERIC Descriptors. Phoenix: Oryx Press, 1980.

47. Emmeluth, D. S. Achievement motivation. Journal of College Science Teaching, 1972, 2 (1), 27-28.

A grade contract approach was used with an independent research project within a plant biology course at the community college level. Positive student reaction to the procedure is documented.

48. Erickson, S. C. Grading by Contract. Center for Research on Learning and Teaching, No. 57. University of Michigan at Ann Arbor, April, 1976. (ERIC Document Reproduction No. ED 127 854).

This memo to the faculty of the University of Michigan discusses a number of areas that should be considered in planning to grade by contract. Among these are variations in the complexity of the contract, problems of quantity and quality, and the importance of peer review of the contract tasks.

49. Farnsworth, E. Encouraging children to learn. School and Community, 1977, 63 (9), 33.

A Contingency Management (CM) classroom for educable mentally retarded students is described. CM uses "contingency contracting" to create an atmosphere in which students are motivated to do good work and at the same time exhibit acceptable behavior.

50. Fast, B. L. Contracting. Journal of Health, Physical Education and Recreation, 1971, 42 (7), 31-32.

Describes a method of teaching high school physical education to seniors using the contract method. Sample contracts on a bowling unit are included.

51. Festinger, L. A Theory of Cognitive Dissonance. Evanston: Row, Peterson, 1957.

52. Fiske, A. J. and Kersey, T. Physics is great! Physics Teacher, 1974, 12 (1), 25-28. (ERIC No. EJ 091 729).

The Telstar Regional High School (Maine) physics course was taught using learning contracts. The contracts for the six units included both traditional physics tasks and untraditional tasks, such as writing a poem about physics. The individualization and the nontraditional style of the course combined to motivate the students.

53. Fortune, G. Y. Performance Contract or Syllabus? A Comparison of Student Achievement in Social Science Courses. (Ed. D. Practicum, Nova University, April 1977, 46 pages). (ERIC Document Reproduction Service No. ED 144 662).

Grade contract and nongrade contract sections were formed in two different social science courses. Analysis showed that the contract students received higher grades, had less attrition and made greater use of the learning laboratory, thus gaining more content exposure and achievement of course objectives. Sample contracts are included.

54. Frymier, J. R. The Nature of Educational Method. Columbus: Charles E. Merrill, 1965.

55. George, K. A. An office procedures course for dental assistants. Business Education Forum, 1973, 28 (1), 23-25.

In a course designed to promote clerical office procedures for dental assistants, students were asked to submit a typed contract specifying the grade for which they were working as well as a list of tasks chosen from a number of required and optional projects prepared by the instructor. Some problems encountered with the method are explained and suggestions are given for overcoming them.

56. Gilbert, D. J. An ancient view of teaching (chemistry) revisited. Journal of Chemical Education, 1972, 49 (1), 56-57. (ERIC No. EJ 052 081).

Describes a grade contract approach used in a freshman chemistry course at the college level. Students who do not complete the course in a semester's time are given an extension which permits them to achieve the desired grade during the following semester. Suggestions are offered for improving the course in the following areas: lectures, testing, attendance, and course content.

57. Gillespie, D. K. Differential unit assignments. Journal of School Health, 1966, 36 (2), 80-86.

Differential unit assignments, sometimes called "Challenge and Contract Units," are units of learning designed to accommodate at least three levels of learning ability. Basic work requirements must be completed to obtain a C grade; extra credit work must be completed for a B; and advanced work must be completed for an A. An example of a mental health unit is presented.

58. Gillespie, W. B. Linking Teacher Education and Health Care Through Contingency Management of Learning. 1979. 11 pages. (ERIC Document Reproduction Service No. ED 177 131).

Organizational linkages between teacher education courses and various health care industries are described wherein students contracted for grades at the University of Louisville.

59. Gilman, D. A. Alternatives to Tests, Marks and Class Rank. Indiana State University, May, 1974. 56 pages. (ERIC Document Reproduction Service No. ED 095 210).

The author discusses some of the advantages and disadvantages of the grade contract, semi-contract, and evaluation schedule. A sample contract in world history is included.

60. Good, C. V. (Ed.). Dictionary of Education. 3rd ed. New York: McGraw-Hill, 1973.

61. Greene, M. (Ed.). Existential Encounters for Teachers. New York: Random House, 1967.

62. Grimes, G. A. A contract system for freshman and sophomore English courses. College Composition and Communication, 1972, 23 (2), 192-195. (ERIC No. EJ 057 750).

Detailed contracts are presented for a freshman composition course and a sophomore literature course. Student reactions to the system were almost unanimously favorable.

63. Grimshaw, J. A., Jr. A contractual examination: another alternative. College English, 1977, 39 (3), 368-370. (ERIC No. EJ 169 448).

An upper division English course which emphasizes values in western world literature is organized so that each essay examination question has three levels of response (A, B and C). Students

may choose the level of answer they wish to attempt for each question and, if successful, will be awarded the letter grade equivalent to that level.

64. Grittner, F. M. Individualized instruction: an historical perspective. Modern Language Journal, 1975, 59 (7), 323-333. (ERIC No. EJ 127 807).

An historical account is presented of various approaches to individualization including the Dalton and Winnetka plans. Student contracting for grades is claimed to be an offshoot of the Dalton plan. Reasons are advanced as to why the plans failed to achieve their goals, and implications are presented for current approaches to individualization.

65. Gronlund, N. E. Improving Marking and Reporting in Classroom Instruction. New York: Macmillan, 1974.

66. Grote, M. Contracting physics. Physics Teacher, 1972, 10 (8), 461. (ERIC No. EJ 068 423).

A learning contract is used in teaching physics at Williamsburg High School (Ohio). The contract was adapted from the one suggested in the Project Physics Teacher Resource Book.

67. Harvey, A. Student contracts--a break in the grading game. Education Canada, 1972, 12 (3), 40-44. (ERIC No. EJ 068 037).

This article presents a rationale for the grade contract system, procedures for organizing contracts, and some of the advantages and problems faced by students and teachers who adopt the system.

68. Hassencahl, F. Contracts Move from Commerce to the Classroom. Paper presented at the annual meeting of the Eastern Communication Association. New York City, March, 1977. 13 pages. (ERIC Document Reproduction Service No. ED 162 360).

The author describes some of the alternative ways that grade contracts may be organized. A number of the advantages of contracting for grades are listed along with a short review of relevant research studies.

69. Hassencahl, F. Contract grading in the classroom. Improving College and University Teaching, 1979, 27 (1), 30-33. (ERIC No. EJ 201 638).

The author contrasts conventional grading and the grade contract, discusses various types of contracts as well as the advantages and research related to contracting for grades.

70. Head, J. C. A study of the effectiveness of an individualized instruction-contract grading program in a college algebra class (Doctoral dissertation, George Peabody College for Teachers, 1974, 113 pages).

An individualized instruction-contract grading group and a lecture-discussion group were compared in a college algebra and trigonometry class with respect to achievement and attitude. No significant differences were found. Listed are a number of advantages and disadvantages of the individualized instruction-contract grading approach.

71. Heimler, C. H. and Cunningham, J. Science methods by learning contract. School Science and Mathematics, 1972, 72 (7), 624-630. (ERIC No. EJ 066 249).

The authors report the use of an extensive grade contract system for organizing a science methods course for prospective high school teachers. Psychological and pedagogical concepts are stated and related to contract work. Some advantages and disadvantages of the system are noted.

72. Herman, J. J. Individualize your instruction by contract teaching. Clearing House, 1963, 37 (9), 551-554.

This early article on grade contracting contains two examples of the procedure. One includes the detailed plans of an 11th grade English teacher, and the second describes an approach to teaching 8th grade science on the basis of individual units.

73. Holleran, B. P. An a-group approach to advanced public speaking. The Speech Teacher, 1971, 20 (3), 216-219. (ERIC No. EJ 042 774).

Students in an advanced public speaking course were allowed to choose optional assignments and thus accumulate points toward different grade levels. Various details and conditions of the contract are described.

74. Holleran, B. P. The use of performance options in speech courses. Today's Speech, 1972, 20 (Winter), 27-29.

Grade contracts are arranged in terms of performance options with a maximum number of points assigned to each. Total point equivalents to letter grades and performance options are listed for courses entitled "Public Speaking and Group Dynamics."

75. Homme, L. E. et al. How to Use Contingency Contracting in the Classroom. Champaign, Ill.: Research Press, 1970.

76. Howe, L. W. and Howe, M. M. Personalized Education: Values Clarification and Beyond. New York: Hart, 1975.

77. Ireland, O. S. Teaching colonial history: a proposal. The History Teacher, 1971, 4 (4), 14-18. (ERIC No. EJ 038 595).

The organization of a 5-unit upper level course in colonial American history is described. Grading is on a semi-contractual basis where C is allowed for passing all quizzes and higher grades are earned by submitting satisfactory papers.

78. James, S. M. The evolution of a language arts program for pre- and early adolescent students. English Journal, 1977, 66 (4), 47-51. (ERIC No. EJ 162 026).

Describes the development of more than 60 contracts on various themes in language arts that were used with middle school and junior high school students. The contracts were assigned credit that could be earned during a nine-week marking period in order to be awarded different grades. Advantages and disadvantages of the program are explained and a sample contract is included.

79. Jamieson, J. and Gillam, R. Fighting failure with a contract. School and Community, 1976, 62 (8), 5; 33.

Rather than remain in the seventh grade, nine students at the DeSoto Junior High School entered into provisional promotion contracts with the school. Through the contract, it was understood that if a student showed no progress during the first quarter, he or she would return to the seventh grade. After the first quarter, eight of the nine students had shown enough progress to remain in the eighth grade. A sample contract is included.

80. Janaro, R. P. Micronizing the humanities: a communal approach. New Directions for Community Colleges, 1975, 3 (4), 67-77. (ERIC No. EJ 129 869).

Describes an on-campus learning commune organized by a group of general education instructors and students. The author claims that the grade contract played a major role in making the program a success.

81. Kaisershot, A. L. Contracting grades. Journal of Business Education, 1974, 50 (3), 120-121. (ERIC No. EJ 110 428).

The article reports the organization of an innovative advanced shorthand/transcription program at the university level utilizing the competency-based concept along with individualized progression and contractual grading. Included is an actual contract for advanced shorthand and transcription.

82. Keller, K. Good-bye, teacher.... Journal of Applied Behavioral Analysis, 1968, 1, 79-89.

83. King, T. R. A contract approach to a public speaking course. The Speech Teacher, 1972, 21 (2), 143-144.

The author describes a public speaking course at the university level organized in terms of the grade contract where a student's work falls into these categories: performance, knowledge of theory, and a written term project. The advantages of the contract approach in a public speaking course are presented.

84. King, T. R. A contract approach to a fundamentals of speech course. In Focus: Basic Speech Instruction. Florida Speech Communication Association, 1973. 36 pages. (ERIC Document Reproduction Service No. ED 137 879).

This chapter describes a fundamentals of speech course taught at Florida State University using contract grading. A required phase of the course provides assurances that all students receiving a passing grade can meet minimum standards. An optimal phase allows better students to broaden their experiences and to have some selection in choosing the activities they find meaningful.

85. Kirschenbaum, H., Simon, S. P., and Napier, R. W. Wad-ja-get? The Grading Game in American Education. New York: Hart, 1971.

86. Kirschenbaum, D. S. and Riechmann, S. W. Learning with gusto in introductory psychology. Teaching of Psychology, 1975, 2 (2), 72-76. (ERIC No. EJ 116 715).

Grade contracting, demonstrations, team teaching, and small groups form the basic organization for a large introductory psychology course. A vast majority of the students indicated they preferred the contract system to the more usual grading system. Suggestions are offered for improving various components of the course.

87. Knapp, J. V. Contract/conference evaluations of freshman composition. College English, 1976, 37 (7), 647-653. (ERIC No. EJ 146 328).

Describes a procedure whereby the instructor, in the presence of the student, evaluates the latter's themes and helps the student plan future assignments. Grades are based on the quantity of papers completed while the standards for evaluation are increased with each change to a higher grade level.

88. Kokus, N. and Mussoff, L. Assessing English: an alternative. English Journal, 1975, 64 (3), 73-76. (ERIC No. EJ 117 481).

The authors describe an alternative learning program whereby a limited number of students in a large high school work on a grade contract system in the subject areas of English, humanities, government, history, and mathematics.

89. Kraft, R. E. The students' view of contract teaching. Journal of Health, Physical Education and Recreation, 1974, 45 (8), 47. (ERIC No. EJ 106 636).

Based on the author's experience of teaching physical education at the university level, the article lists 13 positive and 11 negative student attitudes toward contract teaching. In general, a high percentage of students chose to contract for grades in preference to traditional grading.

90. Libbee, M. PSI and a contract grading system. Journal of Personalized Instruction, 1978, 3 (2), 114-116.

The author describes a geography course for elementary education majors that combines contract grading, the personalized system of instruction, and small-group work. Some of the advantages, drawbacks, and limitations of the arrangement are discussed.

91. Littlefield, V. Behavioral criteria for evaluating performance in public speaking. Speech Teacher, 1975, 24 (2), 143-145. (ERIC No. EJ 122 457).

The article offers a set of criteria used in a university level speech course. Six general standards as well as seven specific standards for each of three grade levels are described.

92. Lott, L. A., Jr. et al. Strategies and Techniques for Mainstreaming: A Resource Room Handbook. Monroe County Intermediate School District, October 1975. 249 pages. (ERIC Document Reproduction Service No. ED 117 890).

Part of this handbook describes how a regular classroom teacher and a resource room teacher may cooperate for the purpose of individualizing instruction for handicapped students through the use of grade contracts.

93. Martin, R. Catch them being good: Contingency contracting in the classroom. Nation's Schools, 1971, 88 (5), 65-67.

In a contingency contracting system, students contract to do something they want to do contingent upon successfully completing what the teacher wants them to do. This article describes how contingency contracting got started and defines terms such as reward, intrinsic rewards, and material incentives.

94. Mather, J. et al. Contracts can motivate physical underachievers. Journal of Physical Education and Recreation, 1978, 49 (6), 23-24. (ERIC No. EJ 187 901).

Over 128 contracts divided into three progressively more difficult levels formed the basis for a grade contract used with 7th- and 8th-grade boys and girls who scored considerably below the norm on a standardized fitness test. An informal evaluation led the authors to be optimistic about the potential of such a program for both immediate and long-term effects.

95. McCracken, T. E. and Ashby, W. A. The widow's walk: an alternative for English 101--creative communications. College English, 1975, 36 (5), 555-570. (ERIC No. EJ 110 836).

Describes a basically existential approach to teaching and learning in a freshman creative communications course that includes contracting for grades.

96. McLaughlin, J. G. Contracts help solve project problems. Clearing House, 1961, 35 (7), 418.

This is one of the earliest articles advocating the use and suggesting the advantages of the grade contract for project assignments in almost any type of subject course in the high school curriculum.

97. McMillian, J. H. Effect of instructional procedure and pupil locus of control on achievement and attitudes. Psychology in the Schools, 1980, 17 (1), 123-127. (ERIC No. EJ 217 307).

A two-week unit on nutrition was taught to two sixth-grade classes divided into internal and external locus of control groups. Half of the externals and internals in each class were randomly assigned to a structured instructional procedure and half assigned to a grade contract procedure. There were no significant differences in achievement among any of the groups although the internal-contract group seemed to show a more positive attitude toward the unit than did the other three groups.

98. Meisels, L. The student's social contract: learning social competence in the classroom. Teaching Exceptional Children, 1974, 7 (1), 34-35. (ERIC No. EJ 109 314).

The psychoeducational model described uses a social contract with acting-out children to structure social situations in the classroom so that expectations are clear and behavioral change is obvious to both the teacher and the child. In this model, the child and the teacher discuss behavior problems in terms of how to learn more appropriate, communicative ways to express feelings. The procedures for the development of a social contract are described.

99. Mundy, C. J. Performance based contract teaching. Journal of Health, Physical Education and Recreation, 1974, 45 (8), 39-40. (ERIC No. EJ 106 633).

The author advocates contract teaching and grading in physical education at the university level for prospective teachers.

100. Murray, D. Learning contracts--better than assignments. Instructor, 1974, 84 (1), 74-75.

The author advocates two types of learning contracts that are claimed to achieve greater individualization of instruction. The fixed contract contains evaluative criteria established by the teacher; whereas in the open contract the criteria are established by the learner and negotiated with the teacher. The author suggests beginning with the fixed contract.

101. Myers, J. W. English on a business model. Clearing House, 1976, 49 (6), 258-259. (ERIC No. EJ 137 257).

Eighth-grade students, during the last six-week grading period of the school year, were given the opportunity to choose a subject area of interest and contract for grades in an independent study course in English. Emphasis was placed on the students' ability to negotiate with the teacher.

102. Nagle, K. Contract for individual projects. Business Education Forum, 1970, 24 (7), 19-20. (ERIC No. EJ 018 568).

The author describes the use of the grade contract with distributive education students. Sample contracts are presented wherein students design their own projects and accumulate points toward specific grade levels.

103. Newcomb, L. H. Here we go again--grades! grades! grades! Agricultural Education Magazine, 1973, 45 (9), 200; 207. (ERIC No. EJ 069 728).

A grade contract for a high school agriculture class is described and its advantages are listed.

104. Newcomb, L. H. The effects of contract grading on student performance. (Doctoral dissertation, Ohio State University, 1973, 143 pages.)

This study reports a replication over two quarters to determine the effect of contract grading and conventional grading on various student outcomes in an introduction to agricultural education course. No significant differences were found on the cognitive post-test, the attitudes toward the course, the amount of assigned reading completed, or how students perceived the extent to which the course met their individual needs. However, during the second term, the contract group received significantly higher final grades than the conventionally graded students.

105. Newcomb, L. H. and Warmbrod, J. R. The Effect of Contract Grading on Student Performance. Columbus, Ohio: Ohio State University, 1974. 15 pages. (ERIC Document Reproduction Service No. ED 093 967).

Students on the grade contract were compared with students using a conventional grading system in an introductory university

level course in agricultural education. No differences were found betweeen the groups in any of the following variables: post-test, final grades, attitude toward the course, reading assignments completed, time devoted to course, and degree to which students perceived their needs to be met by the course.

106. Oard, M. My auto students contract for their grades. Industrial Education, 1974, 63 (8), 48-49.

Learning contracts were developed from performance objectives in an auto mechanics course. A job checklist and sample contracts are included.

107. O'Donnell, L. E. Experience based contracting in elementary physical education. Physical Educator, 1976, 33 (3), 135-139.

The introductory course in elementary physical education at the University of Rhode Island is designed to provide more flexibility in training of prospective teachers. Learning contracts are used, permitting students to make choices on just what types of experiences they become involved with. Students are allowed to choose from 11 different contracts, each having a specific point value. The contracts are included in this article.

108. O'Hanlon, J. and Bock, R. Teaching responsibility through student commitment. Theory into Practice, 1973, 12 (4), 242-245. (ERIC No. EJ 088 725).

A system is described wherein students enrolled in a literature course at the senior level of high school contract individually for a grade. The authors point out some of the benefits of the program including in particular how students learn to take greater responsibility for the immediate future of their education.

109. Ostrow, A. C. More choices to motivate deeper study. Journal of Physical Education and Recreation, 1975, 46 (3), 37. (ERIC No. EJ 115 081).

An undergraduate physical education course in motor learning is described. The unit of measurement used in the learning contract was designated as the CURL (Choices Undo Regimented Learning). Students could accrue CURLs through lecture attendance, discussion sessions, building a laboratory apparatus, or research projects.

110. Ovnik, M. A. Contract teaching. Science and Children, 1976, 13 (6), 44-45. (ERIC No. EJ 138 575).

The author uses contract teaching to individualize instruction in science for special education students. Activities are assigned points which may be accumulated and equated to different letter-grade levels. Suggestions are given to aid the clinical teacher using the contract method.

111. Paduano, M. A. Introducing independent study into the nursing curriculum. Journal of Nursing Education, 1979, 18 (4), 34-37.

An independent study program including the contracting for a grade of C was initiated for a group of marginal and failing students enrolled in an introduction to drug administration course. Instructor and student reactions to the procedure were enthusiastic.

112. Parchman, L. L. Experiences with contract teaching. Journal of Health, Physical Education and Recreation, 1974, 45 (8), 41-42; 46. (ERIC No. EJ 106 634).

The author enthusiastically endorses the grade contract method in physical education at the university level. Sample contracts in kinesiology and beginning tennis, based on accumulating points, are presented.

113. Parks, A. G. and Zurhellen, H. S. Student attitudes toward the grade contract. Improving College and University Teaching, 1978, 26 (4), 239-242. (ERIC No. EJ 198 264).

The researchers surveyed the opinions of 82 students who had completed three education courses using contract grading. Student responses to all 15 questionnaire items dealing with grading procedures, course interest and learning experiences, and the professor's teaching role significantly favored the contract grading method over the regular course format.

114. Partin, R. L. Multiple option grade contracts. Clearing House, 1979, 53 (3), 133-135. (ERIC No. EJ 222 766).

The author describes the process and presents some of the advantages of a grade contract method that allows students multiple options and maximum choice in the work required for a specific letter grade.

115. Pendrak, M. Performance contracting and the secondary reading lab. Journal of Reading, 1974, 17 (6), 453-456. (ERIC No. EJ 094 450).

A plan is presented wherein students enrolled in remedial reading at the ninth-grade level can contract for various activities (points) in a reading laboratory. The cumulative points count up to 20 percent of the English grade. Various aspects of the program were evaluated and found to be successful.

116. Peotter, J. Contracts. Music Educators Journal, 1975, 61 (6), 46-49. (ERIC No. EJ 112 011).

A "contract" system was designed to introduce eighth-grade students to various aspects of music, taking into account their

individual differences and the desire of these students to "do" rather than just to "watch." At the same time, the contracts integrate several subject areas. At the beginning of each eight-week period, each student signs and turns in a form stating the work to be done and the time allowed. The teacher acts as a resource person, giving help and suggestions where needed. Sample contracts are listed.

117. Perry, D. An experiment in teaching elementary algebra. Two-Year College Mathematics Journal, 1971, 2 (2), 40-46. (ERIC No. EJ 046 090).

Mastery learning and contract grading are combined in a college-level algebra course. Comparisons with a control group and a traditional grading system showed that students achieved higher grades in the experimental program.

118. Pierce, V. and Avakian, A. N. Music appreciation. Adult Leadership, 1977, 25 (9), 266.

At Empire State College (New York), students devise their own degree programs in order to obtain their educational goals, associate degrees, or baccalaureates. A learning contract specifies the activities to be undertaken for a specific study, the criteria by which the work is to be evaluated and the amount of credit to be earned. A case study of a music appreciation contract is presented.

119. Polczynski, J. J. and Shirtland, L. E. Expectancy theory and contract grading combined as an effective motivational force for college students. Journal of Educational Research, 1977, 70 (5), 238-241. (ERIC No. EJ 168 750).

Compared with control groups, college students in business classes using the grade contract expended more effort (time) on course-related activities. Results are interpreted in terms of expectancy theory.

120. Poppen, W. A. and Thompson, C. L. The effect of grade contracts on student performance. Journal of Educational Research, 1971, 64 (9), 420-423. (ERIC No. EJ 040 114).

Four educational psychology classes were randomly divided into two groups: one evaluated by a grade contract approach, the other evaluated by a traditional method. Nonsignificant differences in achievement and attitude favored the grade contract group. Included is a copy of the contract used in the study.

121. Raymond, A. R. The contract as alternative. Social Studies, 1975, 66 (2), 54-55. (ERIC No. EJ 113 380).

A grade contract approach is described for a survey course in American history at the college level. Some advantages and disadvantages of the system are discussed.

122. Riegle, R. P. The limits of contracting. High School Journal, 1978, 62 (1), 13-19. (ERIC No. EJ 191 871).

Several concepts are frequently embraced in discussions of contracting: clarification of objectives, individualization, self-evaluation, and cooperation or negotiation between student and teacher. The problems associated with each of these goals are discussed.

123. Roberts, D. E. A Modest Proposal--1972 Edition. Paper presented at the meeting of the International Reading Association. Detroit, Michigan, March, 1972. 8 pages. (ERIC Document Reproduction Service No. ED 063 078).

A course in teaching reading for prospective English teachers is described. The course was taught using the contract system for students desirous of working beyond the "minimum essentials" or C level.

124. Roberts, T. D. (Ed.). Four Psychologies Applied to Education: Freudian, Behavioral, Humanistic and Transpersonal. New York: John Wiley and Sons, 1975.

125. Rogers, C. R. Freedom to Learn. Columbus: Charles E. Merrill, 1969.

126. Ross, E. P. and Doe, B. D. Collegians contract for reading. Journal of Reading, 1973, 17 (1), 40-43. (ERIC No. EJ 084 376).

The authors explain the use of the grade contract in a laboratory course on reading improvement at the university level.

127. Rushton, J. B. Business Statistics 1--An Audio-Tutorial Venture: Course Organization, Sample Study Guide and Grade Contract. Paper presented at the Annual Meeting of the Audio-Tutorial Congress. San Francisco, California, November, 1974. 9 pages. (ERIC Document Reproduction Service No. ED 098 998).

An introductory business statistics course consisting of 13 modules is discussed. Included is the grade contract form used by each student to set his/her course performance objectives.

128. Schlenker, R. M. An Introduction to Marine Education: A Course for Preservice Science Teachers. 1977. 22 pages. (ERIC Document Reproduction Service No. ED 135 644).

A section in this syllabus for a college course in marine education describes the contract grading requirements for various categories of students.

129. Schmitz, C. D. and Schmitz, E. A. Individualized contracting in the elementary classroom. School and Community, 1972, 58 (9), 14-15; 23.

A contract approach was introduced into a third-grade classroom, containing a typical heterogeneous grouping of children with a wide range in ability levels, scholastic achievement, socioeconomic background, racial origins, and energy levels. Two contract periods are scheduled each week (Monday-Tuesday and Thursday-Friday), and Wednesday is a time for total class instruction. The contract system has helped this classroom reach its goal of individualization.

130. Schwartz, G. J. College students as contingency managers for adolescents in a program to develop reading skills. Journal of Applied Behavior Analysis, 1977, 10 (4), 645-655.

Behavior modification procedures and an individualized tutorial program were used to remedy reading skill deficits in seventh-grade adolescent subjects. Forty-two college students were trained as reading tutors and contingency managers to use reading diagnostic and remedial materials, and to develop contracts and reinforce positive verbal responses toward reading. There were significantly greater increases in reading scores of experimental groups, compared to control groups; substantial improvements in target behaviors; and significant changes in verbalizations toward reading after 10 weeks of treatment. Six-month follow-up studies showed that all groups had consolidated their gains and that grade scores continued to improve. The improvement of the experimental subjects remained significantly ahead of the control subjects.

131. Shirts, M. A. The college grade contract. Educational Forum, 1969, 32 (4), 456-458.

Suggestions are given on organizing the grade contract system of grading based on the author's experience in teaching a senior-level college course dealing with the historical and philosophical foundations of education.

132. Shtogren, J. A. Humanism and Technology, a Model for Integrating Educational Technology in the Humanities Classroom. Paper presented at the International Learning Technology Congress and Exposition on Applied Learning Technology for Human Resource Development. Washington, D.C., July, 1976. 14 pages. (ERIC Document Reproduction Service No. ED 127 964).

This paper describes a university course in modern fiction employing a contract grading system where students are required to participate freely in the grading decision-making process.

133. Simon, S. B. and Bellanca, J. A. Degrading the Grading Myths: A Primer of Alternatives to Grades and Marks. Washington, D.C.: Association for Supervision and Curriculum Development, 1976. (ERIC Document Reproduction Service No. ED 132 171).

This volume contains a number of chapters written by various authors criticizing conventional methods of grading and reporting

and suggesting alternatives. Included is a chapter by Arthur W. Combs in which he describes his method of contract grading.

134. Smith, B. C. and Lerch, H. A. Contract grading. Physical Educator, 1972, 29 (2), 80-82.

The authors answer significant questions regarding contract grading based upon their experience in teaching physical education majors. A sample contract is printed.

135. Smith, L. L. and Riebock, J. A middle school tries contractual reading. Clearing House, 1971, 45 (7), 404-406. (ERIC No. EJ 037 087).

A rationale is presented for using contract work and grading in reading at the sixth grade level. The authors describe their program and summarize the results of a student questionnaire that indicated high positive acceptance of the method.

136. Solomon, M. N. The contract method. School Shop, 1966, 25 (9), 32-33.

The contract approach to instruction is one way which the teacher can help his or her students to become familiar with some of the conditions found in industry. The job is explained to the student, who is expected to complete the job with little, if any, help from the instructor. An example from an advanced machine shop class is presented.

137. Sonnenberg, L. A. and Hildebrand, C. N. An individualized course in clinical psychiatry. Journal of Medical Education, 1976, 51 (7), 550-557. (ERIC No. EJ 141 498).

The organization and philosophical foundation for an individualized course in clinical psychiatry is described. A student wishing an A grade must contract with the instructor, otherwise he selects his own grade.

138. Sprague, J. Evaluation: Problems in Evaluating Speech Communication Performance. Paper presented at the Annual Meeting of the Speech Communication Association. San Francisco, December, 1971. 13 pages. (ERIC Document Reproduction Service No. ED 061 223).

The author advocates measuring speech performance, essay exams, and student papers and projects on a "credit" or "no credit" basis. Grade contracts are determined by reporting the students' investment in the course in terms of the performances for which they receive credit.

139. Staiger, E. H. Student performance in contract graded electronics laboratory. Engineering Education, 1978, 68 (5), 414-419. (ERIC No. EJ 179 987).

Contains a detailed description of a second college level electronics laboratory course operated with a grade contract format. A laboratory schedule and grade contract form are included along with student responses to an evaluation questionnaire.

140. Starch, D. and Elliot, E. C. Reliability of grading high school work in English. School Review, 1912, 20, 442-457.

141. Starch, D. and Elliot, E. C. Reliability of grading work in history. School Review, 1913, 21, 676-681.

142. Stasz, C. Contract menu grading. Teaching Sociology, 1976, 4 (1), 49-66. (ERIC No. EJ 147 199).

A short review of research studies stresses the negative aspect of grading systems which involve student competition and curve standards. The grade contract is recommended as an alternative. Included is a copy of a contract used in a sex roles course.

143. Stelzner, S. L. A case for contract grading. Speech Teacher, 1975, 24 (2), 127-132. (ERIC No. EJ 122 454).

The author advocates the use of grade contracting and describes a procedure used in a university level speech course. Also presented are counter arguments to the major criticism of the contract--that student work is evaluated on the basis of quantity rather than quality and that it is also too rigid.

144. Stern, D. A. A flowchart approach to public speaking "on the contract plan". Today's Speech, 1972, 20 (Winter), 25-26.

To overcome the objection that some speech courses graded on the contract system stress only the quantity of work and exclude any quality controls, the author suggests the establishment of student tasks that require different levels of cognitive functioning and that higher grades be associated with higher levels of Bloom's taxonomy.

145. Stock, E. A. The excitement of a flexible schedule. American Biology Teacher, 1971, 33 (7), 409-411. (ERIC No. EJ 043 538).

Flexible scheduling of high school biology course contributed to the increased enthusiasm of the students. Learning contracts were used to evaluate each student's progress.

146. Stone, G. A. Attitudes of industrial education students toward traditional and contractual grading utilizing performance-based instruction. (Doctoral dissertation, Mississippi State University, 1977, 160 pages).

The purpose of this study was to determine the effects of contractual and traditional grading on the attitudes of industrial

education ceramic students at the university level. Overall, the contractual method of grade derivation was more acceptable than the traditional method.

147. Tansey, R. J. Contract teaching: a new approach to PSSC physics. School Science and Mathematics, 1974, 74 (3), 212-220. (ERIC No. EJ 095 240).

A comparison is made between students using grade contracts and students of the previous year who were graded conventionally. Achievement levels on tests and quantity of work favored the contract group. Three sample contracts in high school physics are printed.

148. Tattrie, K. S. Contract Grading in the Basic Communication Course: A Negotiation and Bargaining Situation for Communication Research. Normal, Ill.: Communications Research Center, Illinois State University, April 1972. 12 pages. (ERIC Document Reproduction Service No. ED 061 742).

Contract grading, a process in which the instructor of a course negotiates with his student to determine his grade, is put forward both as a paradigm of an experiment in negotiation theory and as a practical possibility in university courses.

149. Taylor, D. A. Teaching by contract: an article critique. Accelerator, 1975, 8 (4), 35-36.

The author presents a general critique of a chapter entitled "Teaching by Contract and Independent Study Methods: Programming Your Course" taken from a text entitled Inquiry Techniques for Teaching Science by W. D. Romey.

150. Taylor, G. R. The bell curve has an ominous ring. Clearing House, 1971, 46 (2), 119-124. (ERIC No. EJ 044 137).

The author presents a critical and historical review of the method of assigning grades based on the normal curve and suggests the learning contract as an alternative.

151. Taylor, H. Student reaction to the grade contract. Journal of Educational Research, 1971, 64 (7), 311-314. (ERIC No. EJ 034 518).

The study examined the attitudes of senior education students toward the grade contract used in a required measurement and evaluation course. A generally favorable opinion toward the contract system was revealed. The article includes a copy of the contract used in the study.

152. Taylor, H. The grade contract: one solution to the grading problem. The B. C. Teacher, 1970, 50 (4), 68-70.

After noting the social utility of grades, the author lists five major misuses of the conventional method of grading. The grade contract is suggested as a possible solution to the problem of meaningless grades. Advantages of this system over the traditional letter-grade system are discussed. A sample contract is illustrated for an introductory course in tests and measurements.

153. Tener, M. Individualizing bookkeeping with contracts. Balance Sheet, 1964, 45 (6), 248, 288.

The contract approach is advocated as a means of individualizing instruction in bookkeeping. A sample contract form is included.

154. Thomson, C. L., and Poppen, W. A. Commitment to learning: a contract approach. School Health Review, 1970, 1 (4), 24-26.

The authors report some of the advantages of the grade contract applied to various subject matter areas at the elementary and high school levels.

155. Thompson, C. L. and Davis, M. Grade contracts: A method of redirecting motivation. Focus on Guidance, 1970, 3, 7-10.

The authors describe the use of the grade contract with low-ability eighth-grade mathematics students. Compared with a control group, the grade contract students improved significantly in their composite grade average. A sample contract is printed.

156. Thompson, S. D. Contracting for grades in teacher education. SPATE Journal, 1969, 7 (Spring), 86-90.

The author reports some of the advantages of using the grade contract with senior and graduate students enrolled in guidance courses. A sample contract is printed.

157. Trabont, S. H. Individualize instruction by using a contract. Business Education Forum, 1974, 29 (3), 14-15. (ERIC No. EJ 107 010).

The author explains the use of the grade contract in a second-year high school typing course. The work done by all students is of the same quality, and therefore the length of time it takes each student to produce the work is contracted and forms the basis of different grade levels.

158. Van Scotter, R. D. Grading in the UPSTEP Secondary Education Professional Year. Colorado University, 1972. 18 pages. (ERIC Document Reproduction Service No. ED 081 749).

Research and comments, pro and con, regarding different methods of grading, including the grade contract, are reviewed.

159. Van Slooten, P. and Kneer, M. Performance by college students in handball being taught by three different teaching methods. Research Quarterly, 1976, 47 (3), 483-489. (ERIC No. EJ 156 002).

Traditional, contractual, and independent study sections of college level handball, each enrolling 12 students, showed no significant differences in knowledge and skill tests.

160. Ware, B. A. Second chance for high school dropouts. Journal of Home Economics, 1975, 67 (1), 17-20. (ERIC No. EJ 110 438).

The vocational homemaking program of Metropolitan High School (Dallas) offers students comprehensive homemaking classes, home and family living, child development, consumer education, and furnishings. When students enroll, they are given an "opportunity sheet" from which they select their topics of study and the order of the topics. Twelve topics are selected per semester. The teacher and student determine appropriate activities for each topic. When a student has completed all the steps necessary to meet the goals for a topic, both student and teacher evaluate the contract.

161. Warner, D. A. and Akamine, T. Student reactions to college grade contracts. Educational Forum, 1972, 36 (3), 389-391. (ERIC No. EJ 055 859).

The authors surveyed students on their attitudes toward the grade contract used in an undergraduate course in educational measurement and evaluation. In general, the students had a favorable attitude toward the type of grade contract used in the course.

162. Weiss, F. A biology contract unit. The Science Teacher, 1975, 42 (4), 44. (ERIC No. EJ 116 641).

A short eighth-grade biology unit on plants is described wherein students chose their own grade level by working through a number of required and optional verbal and nonverbal activities. Included are a number of techniques that the author felt made the contract method successful.

163. Weiss, F. Teaching science by contracts. Science Activities, 1977, 14 (1), 27-28. (ERIC No. EJ 157 475).

Described is a three-week unit on the human digestive system and nutrition at the eighth-grade level. Required work and optimal activities are outlined for contracting at three letter-grade levels.

164. Werner, P. Early school contact: a contract experience. Physical Educator, 1974, 31 (4), 187-192.

Physical education majors in their sophomore year at Miami University are required to take courses in perceptual-motor learning, movement education, and games and sports in the elementary and middle schools. All three courses are offered on the contract system. Various activities in each course are presented in terms of letter-grade levels. A sample contract is printed.

165. Wilhelms, F. T. (Ed.). Evaluation as Feedback and Guide. Washington, D.C.: Association for Supervision and Curriculum Development, 1967.

166. Williams, R. L. and Anandam, K. The effect of behavior contracting on grades. Journal of Educational Research, 1973, 66 (5), 230-236. (ERIC No. EJ 072 204).

Both academic and social behaviors were included in grade contracts for disadvantaged high school students. Grades of contract students increased during the semester whereas the grades of a control group declined slightly. The authors discuss the evaluation of teacher efficiency in the contract system as judged by the students.

167. Wolvin, A. D. and Wolvin, D. R. Contract grading in a technical speech communication course. Speech Teacher, 1975, 24 (2), 139-142. (ERIC No. EJ 122 456).

The authors describe a technical speech course organized in terms of the grade contract where students are paired and grouped in terms of majors. Included is a copy of the contract used in the course. The authors conclude that contract grading is an effective instructional strategy for individualizing instruction and motivating students in the learning process.

168. Worby, D. Independent learning: the uses of the contract in an English program. Lifelong Learning, 1979, 2 (6), 32-34, 42.

As the essential support of independent learning, the learning contract states four important guidelines: the student's general educational purposes; the specific purposes of the particular contract being written; the actual learning activities to be undertaken; and the criteria by which the work will be evaluated. Suggestions for developing a contract for a college English course, and a sample contract form are included.

169. Yarber, W. L. Contract-for-grade in a venereal disease unit. School Health Review, 1972, 3 (2), 27-30.

The article contains and describes a grade contract used in a venereal disease unit at the high school level. Data on student opinions about the contract-for-grade learning technique are presented.

170. Yarber, W. L. A comparison of the relationship of the grade contract and traditional grading methods to changes in knowledge and attitude during a venereal disease instructional unit. (Doctoral dissertation, Indiana University, 1973, 155 pages).

No significant differences were found between the grade contract and traditional grading groups on the attitude toward learning and classroom activities and on knowledge gained and retained at the junior high school level. Recommendations for future research using the grade contract are presented.

171. Yarber, W. L. Retention of knowledge: grade contract method compared to the traditional grading method. Journal of Experimental Education, 1974, 43 (1), 92-96. (ERIC No. EJ 106 865).

No significant differences were found in retention of knowledge between students graded by the contract method and students graded by the traditional method. Each group had experienced a 9-session venereal disease unit.

172. Yarber, W. L. Put quality control into your grade contracts. School Health Review, 1974, 5 (2), 22-24.

Based on a review of more than 25 grade contract articles, the author summarizes four main techniques to help teachers develop contracts ensuring that higher grades are associated with greater quality of student performance.

173. Yarber, W. L. A comparison of the relationship of the grade contract and traditional grading methods to changes in knowledge and attitude. Journal of School Health, 1974, 44 (7), 395-398. (ERIC No. EJ 106 646).

Attitude, knowledge, and retention were compared for two grade contract groups and two control groups at the grade nine level who experienced a venereal disease unit lasting nine class sessions. Although knowledge gains were significant for both groups, no other significant differences were found between or among the groups on any of the variables.

174. Yarber, W. L. Comparing contract and traditional grading techniques for ninth grade students. Education, 1975, 95 (4), 363-367. (ERIC No. EJ 122 006).

Students graded by contract and a control group graded by the traditional method were tested for changes in attitude and gain of knowledge after completing a venereal disease unit. Although knowledge gains were significant for both groups, no differences were found between the groups on their attitudes toward the classroom and learning activities during the unit.

175. Young, J. A. Please stand up, Mark Hopkins! Journal of College Science Teaching, 1974, 4 (1), 34-36. (ERIC No. EJ 104 836).

Describes the use of a renegotiable contract in a college-level chemistry course that fosters interactions between students and professors and increases the grade-point averages of students.

SUBJECT INDEX TO APPENDIX A

(Listings Refer to Entry Numbers)

Agriculture, 103, 104, 105

Biology, 5, 45, 47, 145, 162

Business, 20, 23, 33, 55, 81, 102, 119, 127, 153, 157

Chemistry, 25, 56, 175

Child Care, Methods of Teaching, 30

Clinical Psychiatry, 137

Discipline, Classroom, 32

Education, 54, 60, 113, 131, 151, 152, 161

Educational Psychology, 9, 29, 40, 108, 114, 116, 120

Electronics, 44, 139

ERIC Descriptors, 46

Evaluation, 12, 34, 165

Foreign Language, 16, 17, 64

Geography, Methods of Teaching, 90

Guidance and Counselling, 43, 156

Health, 57, 58, 97, 163, 169, 170, 171, 173, 174

History, 59, 77, 121, 141

Home Economics, 10, 160

Industrial Education, 106, 136, 146

Language Arts, 3, 18, 27, 62, 63, 72, 78, 87, 88, 101, 108, 115, 123, 126, 130, 132, 135, 140, 141

Mastery Learning, 11

Mathematics, 6, 70, 117, 155

Miscellaneous, 28, 38, 48, 51, 54, 61, 65, 67, 69, 75, 79, 80, 85, 93, 96, 100, 114, 122, 124, 129, 133, 150, 154, 158, 166, 172

Music, 116, 118

Nursing, 42, 111

Parent Education, 31

"Personalized" Instruction, 76, 82

Physical Education, 1, 4, 21, 22, 36, 50, 89, 94, 99, 107, 109, 112, 134, 159, 164

Physics, 41, 52, 66, 147

Political Science, 19

Psychology, 2, 7, 39, 86

Science, Methods of Teaching, 8, 24, 37, 71, 72, 110, 128, 149

Sociology, 142

Social Science, 53

Special Education, 49, 92, 98, 110

Speech, 13, 14, 15, 35, 73, 74, 83, 84, 91, 138, 143, 144, 148, 167

Theatre, 26

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